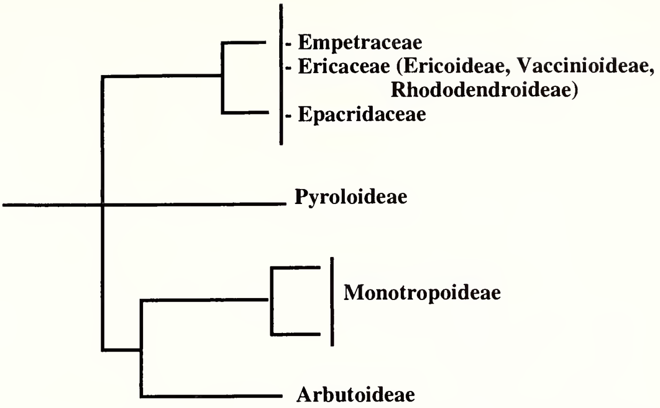

FIG. 2. Schematic of evolutionary trends within the Ericaceae based on a consensus of chloroplast (rbc-L) and nuclear (28S rRNA) DNA data. Tree indicates that the arbutoid and monotropoid mycorrhiza-forming groups, Arbutoideae and Monotropoideae, form a monophyletic sister group to the ericoid and pyroloid mycorrhiza-formers, and that the position of the Pyroloideae is unresolved by molecular data.

arbutoid/monotropoid mycorrhizae formers, a clade consisting of the Arbutoideae and Monotropoideae, and the ericoid mycorrhiza-formers (Cullings, Journal of Evolutionary Biology 7:501–516, 1994) (Fig. 2). The Pyroloideae, a group that forms mycorrhizae that are intermediate in form, cannot be placed within either clade. Based on this, it appears that one of the pressures influencing cladogenesis within the Ericaceae may have been nutrient access via different mycorrhizal strategies, with the ericoid mycorrhiza clade liberating nutrients from acidic soils (Cullings, Journal of Evolutionary Biology 7:501–516, 1994; Specht, Heathlands and Related Shrublands, R. L. Specht (ed.), Elsevier Scientific Publishing Company, New York, 1977), and the arbutoid/monotropoid clade receiving carbon through mycorrhizal connections with ectomycorrhizal fungi shared in common with neighboring trees. Members of the Monotropoideae have taken this strategy to the extreme, and have become achlorophyllous and wholly dependent upon these shared mycorrhizal connections (Björkman, Physiologia Plantarum 13:309–327, 1960: Cullings et al., Nature 379:63–65, 1996). However, because the Monotropoideae are achlorophyllous, it is likely that much of their chloroplast genome has been reduced or lost, as in the case of the achlorophyllous plant parasites in the Orobanchaceae (dePamphilis et al., Nature 348: 337–339, 1991). Thus, corroborating data from chloroplast DNA may not be possible with rbc-L, though other chloroplast loci may prove useful. At present this possibility is being explored.

LECTOTYPIFICATION OF *SETARIA TENAX* VAR. *ANTRORSA* (GRAMINEAE).—Laurence J. Toolin, Herbarium, Shantz 113, University of Arizona, Tucson, AZ 85721.

Setaria tenax (Rich.) Desv. (*Panicum tenax* Rich.) is a neotropical perennial in the subgenus *Setaria* that ranges from southern Mexico to northern South America. The type (FI; fragment, US!) was collected in Cayenne, French Guiana. Within its range, *S. tenax* is best distinguished from its congeners by the following combination of characters: the awns subtending the spikelets bear both antrorse and retrorse barbs; the spikelets are 2.2–2.5 mm long and somewhat hemispheric; the first glume is onethird as long as the spikelet, and the second glume is about one-half the spikelet length; the fertile lemma is strongly gibbous, transversely rugose below, becoming smooth and shiny at the apex.

In 1962 (Illinois Biol. Monogr. 29, p. 44.), J. M. Rominger described a variety, *antrorsa*, of *Setaria tenax*. He indicated the type locality as Chichén Itzá, Yucatán, Mexico, citing *Swallen 2439*, with specimens deposited at both MO and US, but did not designate either of the specimens as the holotype. He noted that his new variety differed from var. *tenax* solely in having only antrorse barbs on the awns, with no retrorse barbs present. Var. *antrorsa* is known from the Mexican states of Yucatán, Veracruz, and Chiapas, as well as Honduras (R. W. Pohl, Flora Mesoamericana 6: 360. 1994).

The US specimen of *Swallen 2439* was examined as part of a study comparing some North and South America taxa to verify the occurence of certain species in both hemispheres. It was noticed immediately that Rominger had never annotated the sheet, and this had been noted on the specimen by D. H. Nicholson. The US folder is labeled "possible isotype". The MO specimen also has no annotation by Rominger. The MO sheet was annotated as an isotype by G. Davidse, who may have simply assumed that the holotype was at US. Pohl (*l.c.*), who seems to be the only author to deal with var. *antrorsa* since Rominger, states the following: "Holotipo: Mexico, Yucatán, *Swallen 2439* (US!)." Pohl is obviously incorrect here, since Rominger himself did not select the US specimen as holotype, and, moreover, listed MO ahead of US in citing the type specimens. How Pohl came to consider the US specimen to be the holotype is a mystery. Rominger, in a recent conversation, told me that he had never had any discussion with Pohl regarding var. *antrorsa*, and encouraged my selecting a lectotype. Pohl's published citation, left uncorrected, constitutes a potential source of confusion.

Article 9.9 of the Tokyo *Code* (1994) provides for the lectotypification of a taxon where a holotype is not designated in the original protologue. Lectotypification of *Setaria tenax* var. *antrorsa* is therefore proposed here.

The MO and US specimens of var. *antrorsa* are not of equal quality. The US sheet has a single culm with an immature panicle. The young spikelets are not mature enough to exhibit adequately the *Setaria tenax* characters given above. The MO specimen, in contrast, has two mature panicles in which the spikelets are well-developed and typical of the species. Because the latter specimen clearly better represents the species, and because Rominger cited the MO specimen first in his protologue, I designate *Swallen 2439* at MO (sheet No. 1043993) as the lectotype of *Setaria tenax* var. *antrorsa*; the US specimen (sheet No. 3090500) then becomes the isolectotype.

REPRODUCTIVE RESPONSE TO FIRE BY THE LAUREL SUMAC, *MALOSMA LAURINA* (ANACARDIACEAE).—Gary B. Perlmutter, 151 N. Lomita Avenue, Ojai, CA 93023.

One of the adaptations perennial plants have to an environment with frequent fires or other stresses is the ability to sprout from surviving structures within the soil after the aerial portions have been destroyed by the disturbance. These subterranean features include rhizomes, bulbs, and undamaged root crowns. Many such fire resistant species produce flowers either immediately following or more than two years after the plant is burned (Gill, Fire and the Australian Biota, Australian Academy of Science, Canberra, 1981; Platt et al., Oecologica 76:353–363, 1988).

Malosma laurina (Nutt.) Abrams (laurel sumac) is a facultative resprouter (Saruwatari and Davis, Oecologica 80:303–308, 1989) with year-round growth in coastal environments of southern California (Watkins and de Forest, Ecology 22:79–83, 1941). While its growth patterns and seedling survivorship following fire disturbance have been studied (Thomas and Davis, Oecologica 80:309–320, 1989), the repro-